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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/782,001

02/20/2004

James J. Baker

84,076

5321

7590

04/27/2007

Office of Counsel Code OC4
Naval Surface Warfare Center
Indian Head Division
101 Strauss Ave., Bldg. D-31
Indian Head, MD 20640-5035

EXAMINER

GELLNER, JEFFREY L

ART UNIT

PAPER NUMBER

3643

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/782,001

Applicant(s)

BAKER ET AL.

Examiner

Jeffrey L. Gellner

Art Unit

3643

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 22-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 22-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 7-9, 22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Pokropivny et al. (J. Solid State Chem., 2000).

As to claim 1, Pokropivny et al. disclose an energetic composition (BN nanotubes of abstract) comprising a high energy material, boron and at least one nanotubular structure (“nanotubes” of page 217) comprising the high energy material, wherein the as least one nanotubular structure is composed of the high energy material (in that BN nanotubes), the high energy material is a melt processible energetic material (in that B is capable of being in a melt).

As to claim 5, Pokropivny et al. further disclose a plurality of nanotubes (from “nanotubes” of title).

As to claims 7 and 8, Pokropivny et al. further disclose inert material (N of BN nanotubes) for in the nanotube.

As to claim 9, Pokropivny et al. further disclose the nanotube longitudinally aligned (Fig. 4).

As to claim 22, Pokropivny et al. further disclose the high energy material incorporated into the nanotube (BN nanotubes).

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Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pokropivny et al. (J. Solid State Chem., 2000).

As to claim 10, the limitations of claim 1 are disclosed as described above. Not disclosed is the nanotube aligned along a direction of increased burn rate. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the composition of Pokropivny et al. by aligning along a direction of increased burn rate depending upon use and direction of burn.

Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman et al. (US 3,879,504) in view of Becuwe (US 5,034,072).

As to claim 4, the limitations of claim 1 are disclosed as described above. Not disclosed is the composition further comprising a melt temperature lowering component. Becuwe, however, discloses a composition with HMX or RDX that contains a temperature lowering component ("oxynitrotriazole" of col. 3, lines 32-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the composition of Sherman et al. by adding a temperature lowering component so as to lower the flame temperature so as to reduce erosion of surrounding structures (see Becuwe at col. 3, lines 32-37).

Claims 7, 8, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman et al. (US 3,879,504).

As to claims 7 and 8, the limitations of claim 1 are disclosed as described above. Sherman et al. further disclose use of an elastomer (col. 1 lines 25-28). Not disclosed is an inert

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material. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the composition of Sherman et al. by using an inert elastomer depending upon use of the composition.

As to claims 23-25, the limitations of claim 1 are disclosed as described above. Not disclosed are the diameter of the nanotubes being 50 to 100 microns; having a diameter for a flame to enter; and, having a wall thickness of a few tens of nanometers. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the composition of Sherman et al. depending upon size of the particles in the composition (see Sherman et al. at col. 3 lines 50-53).

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman et al. (US 3,879,504) in view of Nix et al. (US 3,389,025).

As to claims 9 and 10, the limitations of claim 1 are disclosed as described above. Not disclosed are the nanotube structures being substantially longitudinally aligned. Nix et al., however, discloses a exothermic composition with alignment of internal structures (col. 1, lines 53-57). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the composition of Desilets et al. by having the nanotube structures aligned along a direction of increased burn rate so as to achieve optimum or desired burn characteristics.

Claims 11-13 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman et al. (US 3,879,504) in view of Levinthal (US 4,086,110).

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As to claim 24, Pokropivny et al. further disclose the nanotubes with predetermined diameter sized to permit a flame to enter (from Fig. 4).

Claims 1-3, 5, 6, 22, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Sherman et al. (US 3,879,504).

As to claims 1-3, 22, and 27, Sherman et al. disclose an energetic composition (see abstract) comprising a high energy material, RDX (col. 2 lines 13-26); and, at least one nanotubular structure (from “tubes are extremely small in diameter” of col. 3 lines 50-53) comprising the high energy material (from abstract), wherein the as least one nanotubular structure is composed of the high energy material, the high energy material is a melt processible energetic material.

As to claim 5, Sherman et al. further disclose a plurality of nanotubes (from “tubes” of col. 3 lines 32-53).

As to claim 6, Sherman et al. further disclose the tube diameters being 300 to 1000 microns (from “1/10 the diameter of the tube and claim 1 with RDX being 50 microns would give a tube of 500 microns).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

As to claims 11-13 and 26, the limitations of claim 1 are disclosed as described above. Sherman et al. further discloses the use of HMX (col. 3 lines 10-19). Not disclosed is the composition as a solid propellant for a rocket motor system with the nanotubular structures aligned for increase burn rate. Levinthal, however, discloses the use of an HMX, gas generant composition as a solid propellant for a rocket motor system (col. 2, lines 15-19) which would modify the burn rate (from "high energy oxidizer" of col. 2, lines 15-19). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the composition of Sherman et al. by using HMX depending upon availability of explosive and to use the composition as a propellant in a rocket motor system which would be a burn rate modifier as disclosed by Levinthal so as to increase use of the composition and to align the nanotubes so as to increase burn rate.

Response to Arguments

Applicant's arguments filed 4 January 2007 have been fully considered but they are not persuasive. Applicants' main argument is that neither Desilets et al. nor the other references disclose the nanotubular structure being the high energy material, the material a melt processible energetic material (Remarks middle of page 7 continuing to bottom of page 9).

Examiner has used new art that discloses an energetic composition in the shape of nanotubular structures.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gash et al. disclose in the prior art a nanocomposition.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey L. Gellner whose telephone number is 571.272.6887. The examiner can normally be reached on Monday-Friday, 8:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Poon can be reached on 571.272.6891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeffrey L. Gellner
Primary Examiner
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